

Math 341: Probability

Twenty-fifth Lecture (12/10/09)

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Summary for the Day

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- Blackjack and Gambling:
- Birthday Problem:
- Semester Recap:
- What Next?

Blackjack and Gambling

Basic Strategy:

<http://www.online-casinos.com/images/blackjack-chart.g>

DOUBLE DOWN **DD** STAND **S** HIT **H**

SPLIT IF ALLOWED TO DOUBLE AFTERSWARDS, OTHERS
SURRENDER IF ALLOWED, OTHERS

Dealers Card Showing:

	2	3	4	5	6	7	8	9	10	11	12
8	H	H	H	H	H	H	H	H	H	H	H
9	H	DD	DD	DD	DD	H	H	H	H	H	H
10	DD										
11	DD										
12	H	H	S	S	S	H	H	H	H	H	H

Basic Strategy:

DOUBLE DOWN **DD** STAND **S** HIT **H** SPLIT **P**
 SPLIT IF ALLOWED TO DOUBLE AFTERWARDS, OTHERWISE HIT **H/P**
 SURRENDER IF ALLOWED, OTHERWISE HIT **H/R**

Dealers Card Showing:

	2	3	4	5	6	7	8	9	10	A
8	H	H	H	H	H	H	H	H	H	H
9	H	DD	DD	DD	DD	H	H	H	H	H
10	DD	DD	DD	DD	DD	DD	DD	DD	H	H
11	DD	DD	DD	DD	DD	DD	DD	DD	DD	H
12	H	H	S	S	S	H	H	H	H	H
13	S	S	S	S	S	H	H	H	H	H
14	S	S	S	S	S	H	H	H	H	H
15	S	S	S	S	S	H	H	H	H/R	H
16	S	S	S	S	S	H	H	H/R	H/R	H/R
17	S	S	S	S	S	S	S	S	S	S
A,2	H	H	H	DD	DD	H	H	H	H	H
A,3	H	H	H	DD	DD	H	H	H	H	H
A,4	H	H	DD	DD	DD	H	H	H	H	H
A,5	H	H	DD	DD	DD	H	H	H	H	H
A,6	H	DD	DD	DD	DD	H	H	H	H	H
A,7	S	DD	DD	DD	DD	S	S	H	H	H
A,8	S	S	S	S	S	S	S	S	S	S
A,9	S	S	S	S	S	S	S	S	S	S
2,2	H/P	H/P	P	P	P	P	H	H	H	H
3,3	H/P	H/P	P	P	P	P	H	H	H	H
4,4	H	H	H	H/P	H/P	H	H	H	H	H
5,5	DD	DD	DD	DD	DD	DD	DD	DD	H	H
6,6	H/P	P	P	P	P	H	H	H	H	H
7,7	P	P	P	P	P	P	H	H	H	H
8,8	P	P	P	P	P	P	P	P	P	P
9,9	P	P	P	P	P	S	P	P	S	S
10,10	S	S	S	S	S	S	S	S	S	S

Your Hand:

Online-Casinos
Only The Best In Online Gaming.

Semester Recap

Takeaways: General

- Adding zero, multiplying by 1, summifying.
- Interchanging operations.
- Simplifying algebra.
- Telling a story.
- Auxiliary lines (cookie problem).
- Linearity of Expectation.
- Probabilistic Models.
- Differentiating identities.
- Binary indicator random variables.
- Bring it over (memoryless).
- Standardization.
- Memoryless Games.
- Cauchy-Schwartz, Stirling, CLT.
- Integral transforms (Fourier, Laplace).
- Complex Analysis.

Takeaways: Applications

- Monte Carlo Integration.
- Benford's Law.
- Additive Number Theory (phase transitions).
- Sabermetrics.
- Gambling.

What's next?

- Sabermetrics.
- Additive number theory.
- Graph theory / virus propagation.
- Books (Benford's law, Probability).

- Statistics classes.
- Complex analysis.
- Game theory.